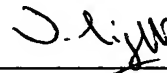


UNITED STATES PATENT AND TRADEMARK OFFICE

I, Derek Ernest LIGHT BA, BDÜ,
translator to RWS Group plc, of Europa House, Marsham Way, Gerrards Cross,
Buckinghamshire, England declare;

1. That I am a citizen of the United Kingdom of Great Britain and Northern Ireland.
2. That I am well acquainted with the German and English languages.
3. That the attached is, to the best of my knowledge and belief, a true translation into the English language of the specification in German filed with the application for a patent in the U.S.A. on
under the number
4. That I believe that all statements made herein of my own knowledge are true and that all statements made on information and belief are true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the patent application in the United States of America or any patent issuing thereon.



For and on behalf of RWS Group plc

The 11th day of August 2003

Device for treating the temporomandibular joint

The invention relates to a device for treating the temporomandibular joint according to the
5 precharacterizing clause of claim 1.

Such a device is known from U.S. 4,211,008. For treating dysfunctions of the temporomandibular joint, the known device is placed into the mouth in such a way
10 that a respective pad lies on the occlusal surface of the posterior teeth of one side and the other respective pad lies on the occlusal surface of the posterior teeth of the other side of the upper jaw. A tube connecting the pads is taken labially past the
15 upper incisor teeth. Because of the fluid connection between the two pads, a hydrostatic pressure equalization takes place when biting together occurs: on the side on which a higher pressure is applied to the pads, fluid is displaced and forced via the tube
20 into the other pad. The temporomandibular joints and muscles are then subjected to uniform loading. A dysfunction of the temporomandibular joint caused by one-sided loading of the temporomandibular joints and muscles can consequently be recognized and, if
25 appropriate, treated with therapy.

For holding the known device in the upper jaw, a flexible tab extending buccally from each of the pads is provided. The tab lies against the gums. In practice,
30 however, it has been found that this does not ensure adequate retention for wearing the device. In particular during speaking, the pads keep being lifted off the posterior teeth and then have to be brought back again into the correct position. When the device
35 is worn in the upper jaw, it is visible. As a consequence of this, patients do not like wearing it during the day. This is detrimental to successful therapy. The object of the invention is to eliminate the disadvantages of the prior art. In particular, it

is intended to provide a device for treating the temporomandibular joint which can be worn comfortably and unobtrusively.

- 5 This object is achieved by the features of claim 1. Expedient refinements are provided by the features of claims 2 to 11.

10 According to the invention, it is provided that each pad has on one side of it a means for clamping on the posterior tooth. - Improved retention in the jaw is achieved in this way. The pads cannot come away from the posterior teeth. The device can be worn unobtrusively in the lower jaw. This facilitates
15 continuous therapy.

The means for clamping has at least one, preferably two, clips bent in a way corresponding to the contour of the posterior tooth. The clip is expediently
20 produced from a stainless metal or from a rigid plastic. The clip is advantageously cast into a clamping shoe produced from plastic. This counteracts a risk of injury caused by the clips. The provision of a clamping shoe also contributes to improved retention
25 of the device. The clamping shoe may be formed in the manner of a U profile with two legs extending from a base area. The legs are expediently bent slightly inward in a way corresponding to the shape of the clips. The base area may be formed in a way
30 corresponding to the morphology of the occlusal surface of the posterior tooth. The clamping shoe rests in a largely form-fitting manner on the posterior teeth. This further contributes to improved retention. A height of the legs preferably corresponds to the height
35 of the posterior teeth. This avoids irritation of the gums.

According to one refinement, the tube is respectively fastened to the buccal legs of the clamping shoe. The

tube may be connected to a passage extending through the buccal leg to the pad. The connection of the tube to the passage or the fastening of the tube is expediently located at one end of the buccal leg. The
5 one end is that end which faces the lips when the device is being worn.

According to a further advantageous refinement, the clamping shoe is produced in an integral form with the
10 pad connected to it. The clamping shoe may also be produced by thermoforming or injection-molding. In this case, the pad can be fused or adhesively bonded to the clamping shoe at a subsequent time. In this case, it is expedient that each pad is connected over its
15 full surface area on one side of it to the respective clamping shoe. This avoids undesired deposits forming between the pad and the clamping shoe.

According to a further refinement, the plastic is of a
20 transparent form. This facilitates cleaning. The device is also relatively unobtrusive when it is being worn. With the transparent form of the plastic, damage can be quickly detected.

25 An exemplary embodiment of the device is explained in more detail below on the basis of the drawing, in which:

figure 1 shows a perspective view of the device
30 accommodated in the jaw,

figure 2 shows a schematic sectional view through a clamping shoe according to figure 1 and

35 figure 3 shows a perspective view of the device.

The device shown in the figures has two clamping shoes 1, respectively formed in the manner of a U profile. Each of the clamping shoes 1 comprises in cross section

a base area 2, from which a buccal leg 3, facing the cheek, and a lingual leg 4, facing the tongue, extend. As can be seen in particular from figure 2, the base area 2 and the legs 3, 4 enclose on [sic] the posterior
5 tooth Z in a largely form-fitting manner. On a side facing away from the occlusal surface of the posterior tooth Z, the clamping shoe 1 is connected to a pad 5. The pads 5 are filled with a fluid F. A passage 6 extending through the buccal leg 3 connects the pads 5
10 to the tube 7. The tube 7 is attached at the ends E of the buccal legs 3 facing the lips. When being worn, the tube 7 is taken labially past the incisor teeth S and connects the two pads 5 to each other for fluid equalization. The clamping shoes 1 are advantageously
15 produced from a transparent plastic. To improve the clamping retention on the posterior teeth Z, clips 8 produced from metal may be advantageously cast into the clamping shoes 1. Two clips 8 are advantageously cast into each of the clamping shoes 1. A height H of
20 the legs 3, 4 is expediently less than the height of the posterior teeth Z. This avoids injury of the gums.

It goes without saying that the embodiment shown may be modified within the scope of the invention. For
25 example, the clamping shoes 1 may be produced in an integral form with the pads 5. In this case, a soft plastic is chosen. To ensure secure retention, the clamping shoes 1 are in this case provided with clips 8. It may also be that the tube 7 is produced in an
30 integral form with the pads 5 and the clamping shoes 1.

The function of the device is as follows:

When biting together occurs, a pad 5 is respectively
35 located between the posterior teeth Z of each side. On that side on which the patient bites more strongly, the fluid F is displaced from the pad 5 and forced via the tube 7 into the pad 5 lying opposite. As a consequence of this, the posterior teeth Z on the other side are

forced apart by the hydrostatic pressure building up in the pad 5 there. At the same time, the stress exerted on the side by the temporomandibular muscles increases. The temporomandibular joints and muscles are subjected to uniform loading on both sides when the device is being worn. One-sided loading is avoided. Dysfunctions of the temporomandibular joint caused as a result can consequently be treated with therapy in a simple and gentle way.

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The device is scarcely visible when it is being worn. For this purpose, it is advantageously produced from a transparent plastic. Because of the clamping shoes 1 provided according to the invention, secure retention of the device is ensured. It can be worn unobtrusively and is scarcely any trouble.

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List of designations

| | |
|---|-----------------|
| 1 | clamping shoe |
| 2 | base area |
| 3 | buccal leg |
| 4 | lingual leg |
| 5 | pad |
| 6 | passage |
| 7 | tube |
| 8 | clip |
| | |
| E | end |
| F | fluid |
| H | height |
| S | incisor tooth |
| Z | posterior tooth |